

REMARKS

Claims 1, 3-6, 14, 18-21 and 23-37 are pending in this application. As a result of claim additions, amendments and cancellations in this Response to Office Action, claims 1, 6, 14, 18-20, 23-30 and 34-37 will remain in this application.

In the Office Action, the Examiner accepted Applicants' Request for Continued Examination and indicated that the amendments filed with the RCE overcame the previously stated § 102(e) rejection over U.S. Patent No. 5,486,599 (Saunders et al.) because Saunders et al. do not teach proteins of the SEQ ID NOS. recited in claims 1, 17, 19, 21, 23 and 29 and do not teach the particular sequence of FGF-1 recited in part (b) of claim 30. In addition, Applicants' amendments overcame the rejections under § 112, first and second paragraphs, except as stated below. Applicants thank the Examiner for his indication of withdrawn rejections, but note that claim 17 is no longer pending in this application

In the Office Action, the Examiner has objected to the specification because, at page 10, line 23, it recites a pentapeptide that is not identified with a SEQ ID No. and that does not appear with an identifying SEQ ID No. in the sequence listing. The Examiner requests that Applicants provide a SEQ ID No. to identify this sequence or to identify the residues of an already listed SEQ ID No. that would identify this pentapeptide. In response, Applicants advise the Examiner that, although the pentapeptide sequence fragment set forth at page 10, line 23 (Ala-Thr-Pro-Ala-Pro) is not identified with a separate SEQ ID No. in the sequence listing, it is already included within the sequence listing that is part of this application, namely, at SEQ ID No. 5 (128-132) and at SEQ ID No. 29 (128-132). Accordingly, this objection should be withdrawn.

The Examiner maintained various rejections of claims 1, 3-6, 14, 18-21 and 23-27 under 35 U.S.C. § 112, second paragraph, as being indefinite, as follows:

In claims 1, 3-6, 18-21 and 23-27, the Examiner stated that the word "activity" is still unclear, as to whether this refers to the heparin-binding activity or another activity (e.g., the growth promoting activity of FGF) (Applicant queries whether this rejection was also intended to encompass claims 28-37). In response, Applicants have amended independent claims 1, 18-20

and 30 to add the words “DNA synthesis promoting” before the word “activity”. Such an amendment is supported in the specification at Figure 5 and Test Example 2, which give the definition and clarity of the term “activity” as DNA synthesis promoting activity. Accordingly, the rejection of claims 1, 3-6, 18-21, 24 and 26-37 should be withdrawn. Claim 23, however, as amended on September 3, 2004, no longer contain the word “activity”, and thus the rejection is moot with respect to claims 23 and 25.

The Examiner stated that claims 1, 18-20 and 23 are confusing by reciting “wherein the heparin binding protein comprises the amino acid sequence of SEQ ID No.: 1, 17, 19, 21, 23 or 29”, because the proteins comprising these sequences have more than a “heparin binding protein” portion. In response, Applicant has amended independent claims 1, 18-20 and 23 to add the word “functionalized” before “heparin binding protein”, as helpfully suggested by the Examiner, and Applicants request that this rejection be withdrawn.

The Examiner stated that claims 4 and 18-20 do not clearly set forth the relationship between the “peptide” (i.e., at claim 4, line 2 and at claim 18, line 3) and the recited SEQ ID Nos. According to the Examiner, the “peptide” to which the sugar chain(s) is covalently bonded is the ryudocan segment at the N-terminal of SEQ ID Nos.: 1, 17, 19, 21 and 23 (likewise the “artificial sequence” within SEQ ID No. 29 may be the “peptide” to which the sugar chain(s) is covalently bonded). In addition, the Examiner stated that claim 19 is confusing as to where, within the functionalized heparin binding protein, the sugar chain is covalently bonded. According to the Examiner, recitation of “a heparin binding protein and a plurality of sugar chains covalently bonded thereto” at lines 1-2 can include bonding of the sugar chains directly to an amino acid of the heparin binding protein, while lines 6-7 appear to require the sugar chains to be covalently bonded to another peptide.

In response, Applicants have amended claims 18-20 (Applicants note that claim 4 has been canceled) to clarify the relationship between the “peptide” and the recited SEQ ID Nos. and to clarify where, within the functionalized heparin binding protein, the sugar chain is covalently bonded. Namely, Applicants have specified early in these claims that “the functionalized heparin-binding protein comprises the amino acid sequence of SEQ ID NO: 1, 17, 19, 21, 23 or

29” and that “the at least one sugar chain is covalently bonded to a peptide at the N-terminal of SEQ ID NO: 1, 17, 19, 21, 23 or 29”. Applicants believe that these amendments sufficiently explain the confusing features of these claims, and Applicants request that this rejection be withdrawn. Should the Examiner feel that the indefiniteness in these claims has not sufficiently been clarified by these amendments, Applicants respectfully request that the Examiner telephone the undersigned attorney in order to work out more satisfactory language.

The Examiner also stated that claim 30 has an improper Markush group, because each of the five members named as the heparin-binding protein has the same sequence, such that this part of claim 30 really has only one member. In response, Applicants have amended claim 30 to recite only one of these segments.

The Examiner objected to claims 3-5, 21 and 31-33 under 37 C.F.R. § 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. In response, Applicants have canceled claims 3-5, 21 and 31-33.

The Examiner also rejected claims 1, 3-6, 14, 18-19, 23-27 and 29 under 35 U.S.C. § 112, first paragraph, for not complying with the written description requirement.

The Examiner states that claims 1, 18-19 and 23 contain new matter by reciting “a heparin binding protein and at least one sugar chain covalently bonded thereto”. According to the Examiner, if one interprets “thereto” as meaning that the sugar chain is covalently bonded to an amino acid residue within the sequence of the heparin binding protein, then this is new matter, since it has been disclosed that SEQ ID No.: 1, 17, 19, 21 and 23 contain a ryudocan domain to which the sugar chain is to be covalently bonded and that SEQ ID No.: 29 contains “an artificial sequence” domain to which a sugar chain is to be covalently bonded. In response, Applicants note that, in amended claims 1 and 18-19, “thereto” clearly references the fact that the at least one sugar chain is covalently bonded to the heparin binding protein, and Applicants have also positively recited that the at least one sugar chain is covalently bonded to a peptide at the N-terminal of SEQ ID NO: 1, 17, 19, 21, 23 or 29. Applicants believe that these amendments

sufficiently clarify the embodiment of the invention to exclude new matter, and Applicants request that this rejection be withdrawn.

In addition, the Examiner stated that claims 4-5, 18-21, 24 and 26-28 contain new matter. According to the Examiner, if one interprets the “peptide, which is covalently bonded to the heparin binding protein”, in claim 4, to be a peptide other than that inherently present in SEQ ID Nos.: 1, 17, 19, 21, 23 and 29 for the covalent binding of the sugar chain(s) , then this is new matter. Similarly, the Examiner stated that claims 18-20 do not clearly require that the “peptide” to be within the SEQ ID Nos.: recited at the conclusion. In response, Applicants have amended claims 18-20 (Applicants note that claim 4 has been canceled) to clarify that the “peptide” is part of the recited SEQ ID Nos. by reciting that the sugar chain is bonded to the “peptide at the N-terminal of SEQ ID NO: 1, 17, 19, 21, 23 or 29”. Applicants believe that these amendments clarify that the “peptide” is within the SEQ ID Nos.: recited at the conclusion of those claims, and Applicants request that this rejection be withdrawn.

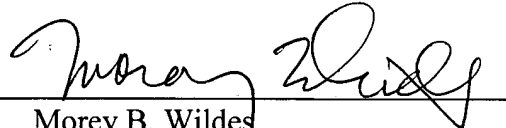
According to the Examiner, claims 6 and 14 contain new matter by requiring the “at least one sugar chain” to be “bonded to the heparin-binding protein.” The Examiner considers the embodiments recited in claim 6 that were set forth at specification page 15 to pertain to methods by which the sugar chain is added to the heparin-binding protein, by a chemical method, as opposed to a method by which the sugar chain is added to a peptide sequence fused to the heparin binding protein. According to the Examiner, the claims are directed to an embodiment of sugar chain addition that was not originally disclosed. In response, Applicants refer to the fact that claim 1, upon which claims 6 and 14 depend, has been amended to positively recite that the at least one sugar chain is covalently bonded to a peptide at the N-terminal of SEQ ID NO: 1, 17, 19, 21, 23 or 29. Applicants believe that this amendment sufficiently clarifies the embodiment of the invention to exclude new matter, and Applicants request that this rejection be withdrawn. Should the Examiner feel that the exclusion of new matter in these claims has not sufficiently been clarified by this amendment, Applicants respectfully request that the Examiner telephone the undersigned attorney in order to work out more satisfactory language.

Conclusion

Reconsideration of the present application, as amended, is requested. If, upon review, the Examiner is unable to issue an immediate Notice of Allowance, the Examiner is respectfully requested to telephone Applicant's undersigned attorney in order to resolve any outstanding issues and advance the prosecution of the case.

An early and favorable action on the merits is earnestly solicited.

Respectfully Submitted,
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